

REMARKS

These remarks are set forth in response to the non-final office action mailed October 4, 2003 (the "Office Action"). As this amendment has been timely filed within the three-month statutory period, neither an extension of time nor a fee is required. Presently, claims 1 through 15 are pending in the Patent Application. In the Office Action, each of claims 1 through 15 have been rejected under 35 U.S.C. §§102(e) and 103(a) as being both anticipated and unpatentable by and over United States Patent No. 6,377,548 to Chuah issued on April 23, 2002. In response, the Applicants respectfully traverse the Examiner's rejections on the art and provide the following arguments in support of each of claims 1 through 15 as originally recited in the Patent Application.

Prior to addressing the rejections on the art, a brief review of the Applicant's invention is appropriate. The Applicants have invented a new and non-obvious method, system and apparatus for defending against attacks by malicious users attempting to disable a server by flooding the server with network traffic. In accordance with the present invention and as stated beginning in page 2 line 15 of the Patent Application, "the consequences of intentional flooding attacks and unintentional overload situations resulting from a burst of connection requests can be mitigated by dropping the traditional notion of attempting to distinguish between legitimate and illegitimate traffic." Rather, in the present invention, "all network traffic is subjected to a policy that attempts to guarantee that legitimate work will be performed and a server will not crash in flooding situations, irrespective of whether the flooding is caused by legitimate or illegitimate traffic."

In operation, in response to a request “from a host for a connection to a port number on a server, the number of connections to the port that have been assigned to the host can be determined.” “If the number of connections exceeds a first threshold, the request for a connection can be denied.” Yet, the “decision to deny” a connection request can be overridden “where a quality of service (QoS) parameter pertaining to the requesting host permits such an override.” Nevertheless, if the number of available connections to the port falls short of a second threshold, the connection request can be denied regardless of the identity of the host. Consequently, the policy defined for a number of permissible connections in the aggregate and also per host can regulate the number of connections established in the server, whether or not the request for a connection with the server can be determined to be legitimate or illegitimate.

Turning now to the rejections on the art, Chuah has been cited in support of both an anticipation type rejection under 35 U.S.C. § 102(e), and also an obviousness type rejection under 35 U.S.C. § 103(a). Chuah relates to an on-demand multiple access methodology for the efficient utilization of the limited bandwidth available in a wireless communications network. In particular, in the Chuah methodology, when a remote host requests a connection to a wireless base station, the base station first must decide whether to admit the new connection. The admission control technique can range from the simplistic in which all new connections are admitted so long as the total number of connections admitted remains less than a maximum number, to the complex.

In a complex implementation described in lines thirty-five (35) through forty-four (44) of column thirty-seven (37) of the Chuah specification, a strict usage priority admission criterion can be applied. In the strict usage priority admission technique, two user priority classes can be

defined where the first class has been prioritized over the second. The number of connections permitted for the second class can be capped at a fixed number below the maximum number of connections available for use in the base station. When a connection request is received from a user of the priority class, the connection can be permitted so long as enough connections remain available for the use of the requestor. Where no connections remain available, a connection allocated to a member of the second class can be terminated in favor of the requestor of the priority class.

Notably, Chuah teaches the management and control of wireless communications in the media access control (MAC) layer within data link layer of the seven layer Open Systems Interconnection (OSI) reference model. Specifically, as shown in Figure 2 of the Chuah specification, MAC frames are processed over an air line in the base station to determine when connections can be established between remote hosts/nodes and the base station. While the base station can limit the number of connections to a maximum amount, more complex schemes in the base station can account for a desired bit rate to account for traffic burstiness in determining a maximum number of connections.

Importantly, it will be recognized that Chuah does not teach the control or management of network connections in the transport layer of the OSI reference model as between hosts and ports allocable in a server as is well-known in the art of data communications. Rather, Chuah relates specifically to wireless base station access control in the data link layer of the OSI reference model. In this regard, in the data communications art, to establish a connection between two computing devices ordinarily requires the specification of a source and destination address and a source and destination port. In the context of the Applicants' invention, as taught

in lines 14 through 20 of page 6 of the Patent Application, a connection request specifying a host address and server address and a server port can be processed to limit the number of connections provided to the host associated with the host address for the specified server port.

Referring to claims 1, 5, 9 and 13, two principal elements are incorporated as claim limitations directed to the foregoing invention. First, it can be determined if a number of connections to a specified port assigned to a specified host has exceeded a prescribed threshold. Second, if so, the connection can be denied. Significantly, the independent claims of the present invention explicitly recite the specification of a server port number and a host requesting a connection to the specified server port. In the dependent claims, additional limitations support the inventive notion that a blanket policy can be applied to the specified port in which a particular host cannot capture more than a threshold number of connections to a specific port. The dependent claims further support the inventive notion that specified hosts can exceed the blanket policy limiting the number of connections allocable to any one host so long as an absolute threshold has not yet been exceeded.


The foregoing specifically recited elements of the Applicants' invention cannot be located within the Chuah reference. In particular, Chuah wholly lacks any reference to receiving "a request from a host for a connection to a port number on the server". Chuah further lacks any reference to denying the request for a connection "if the number of connections to the port assigned to the host exceeds a prescribed threshold." (emphasis added). Importantly, Chuah does not teach "overriding the denial and allowing the request if a QoS parameter pertaining to the requesting host permits the override." (emphasis added). Rather, Chuah simply teaches the prioritized eviction of one class of connection in favor of another as recited in column 37, lines

41-55 of the Chuah specification. Finally Chuah fails to disclose the concept of disallowing a connection notwithstanding the QoS parameter where the number of connections to the port exceeds a threshold.

In conclusion, the teachings of Chuah are not sufficient to support the rejection of any of claims 1 through 15. For all of the above reasons, the claim objections are believed to have been overcome placing Claims 1 through 15 in condition for allowance, and reconsideration and allowance thereof is respectfully requested. The Examiner is encouraged to telephone the undersigned to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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